



US005688657A

United States Patent [19]

Tsang et al.

[11] Patent Number: **5,688,657**[45] Date of Patent: **Nov. 18, 1997**

[54] **MONOCLONAL ANTIBODIES AGAINST HUMAN COLON CARCINOMA-ASSOCIATED ANTIGENS AND USES THEREFOR**

[75] Inventors: **Kwong Y. Tsang**, Bethesda, Md.;
Myron Arlen, Great Neck, N.Y.

[73] Assignee: **International Bio-Immune Systems, Inc.**, Great Neck, N.Y.

[21] Appl. No.: **304,524**

[22] Filed: **Sep. 12, 1994**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 159,836, Nov. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 117,430, Sep. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 670,816, Mar. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 176,337, Mar. 31, 1988, abandoned.

[51] Int. Cl.⁶ **G01N 33/574; G01N 33/53; C07K 16/30; C07K 16/18**

[52] U.S. Cl. **435/7.23; 435/7.1; 435/7.2; 435/40.51; 435/40.52; 435/325; 435/328; 435/329; 435/330; 435/332; 435/344; 530/388.8; 530/387.1; 530/387.3; 530/387.5; 530/387.7; 530/388.1; 530/391.1; 530/391.3; 530/391.7**

[58] Field of Search **530/388.8, 387.3, 530/391.3, 391.5, 391.7, 387.7, 387.1, 387.2, 387.5, 388.1, 391.1; 435/240.27, 7.1, 7.2, 7.23, 40.5, 40.51, 40.52, 325, 328, 329, 330, 332, 344; 424/1.49, 131.1, 155.1**

[56] **References Cited****U.S. PATENT DOCUMENTS**

4,579,827	4/1986	Sakamoto et al.	436/536
4,699,880	10/1987	Goldstein	435/172.2
4,810,781	3/1989	Hollinshead	530/413

OTHER PUBLICATIONS

Bartal, A. H et al, Proc. Am Assoc. Can Res, 31:260 (Abst#1537), Mar. 1990.
Price, M.R et al, IRCS J Med Sci, 13(4):366-367, Apr. 1985.
Herlyn, M et al, PNAS, 76(3):1438-1442, Mar. 1979.
Tsang, K.Y. et al, Fed Proc, 46(3):1058 (Abst#4322), Mar. 1987.
Xu, Danlin, Dissertation (Degree 1990) order #9109383, pp. 1-86, 1990.
Kanellos, J et al, JNCI, 75(2):319-332, Aug. 1985.
Shaw, D.R et al, J Immunol, 138:4534-4538, Jun. 15, 1987.
Tsang, K.Y et al, FASEB, J2(5):A6815, 1988.
Hollinshead, A., et al., Science, 177: 887-889 (1972).
Von Kleist, S., et al., Proc. Natl. Acad. Sci. USA 69: 2492-2494 (1972).
Hollinshead, A.C., J. Nat. Cancer Instit. 52: 327-338 (1974).
Hollinshead, A.C., Cancer, 34: 1235-1243 (1974).
Hollinshead, A.C., Lung Cancer Progress in Therapeutic Research, pp. 501-520, Muggia, F., Rosenzweig, M. (ed.), Raven Press (1979).
Herlyn, M., et al, Proc. Natl. Acad. Sci. USA 79: 1438-1442 (1979).

Hollinshead, A. et al., Tumor Progression, pp. 289-300, Crispin (ed) (1980).

Herlyn, M., et al. J. Clinical Immunol. 2: 135-140 (1982).

Hollinshead, A.C., et al., Cancer 49: 1387-1404 (1982).

Moldofsky, P.J., et al., Radiology 149: 549-555 (1983).

Buchegger, F., et al., J. Experimental Medicine 158: 413-427 (1983).

Takita, J., et al., Cancer Immunol. Immunother. 20: 231-235 (1985).

Price, M.R., et al., IRCS Med. Sci. 13: 366-367 (1985).

Kanellos, J., et al., JNCI 75: 319-332 (1985).

Hollinshead, A., et al., Cancer 56: 480-489 (1985).

Stewart, T.H.M., et al., Lung Cancer: Current Status and Prospects for the Future-Ann. Clin. Conf. on Cancer 28: 351-374 (1986).

Tsang, K., et al., JNJC 77: 1175-1180 (1986).

Douillard, J.Y., et al., Hybridoma 5: 5139-5149 (1986).

Hollinshead, A., Biologic Drugs, Vaccines: Current Status and Future Directions, pp. 85-103, Springer Verlag (1986).

Greiner, J.W., et al., Science 235: 895-898 (1987).

Tsang, K., et al., Fed Proc. 46:4322 (1987).

Shaw, D.R., et al., J. Immunology 138: 4532-4538 (1987).

Tsang, K., et al., Cancer Detection and Prevention 11: 094 (1987).

Tsang, K., et al., Fed. Proc. 6815 (1988).

Tsang, K., et al., 7th International Congress of Immunology, Abstract 125-46 (1989).

Bartel, A., et al., Proceedings 31: Abstract 1537 (1990).

Arlen, M. and Tsang, K., J. Tumor Marker Oncology 5: 313-319 (1990).

Hirschfield, L.S., et al., Federation of American Societies for Experimental Biology, Abstract 5708 (1991).

Xu, D.L., et al., Fed. Amer. Soc. Exper. Biol., Abstract 2109 (1991).

Hollinshead, A.C. and Stewart, T.H.M., Yale Journal of Biology and Medicine 54: 367-379 (1981).

Sears, H.F., et al., J. Clinical Immunol. 2: 141-149 (1982).

Arlen, M., et al., Antibody, Immunoconjugates, and Radiopharmaceuticals, 4: 895-905 (1991).

Arlen, M., et al., Journal of Surgical Oncology 54: 103-108 (1991).

Arlen, M., et al., NY Academy (cancer vaccines) 603-605 (1993).

Fernado, A.D. et al., Miami Symp. Short Reports 3: 88 (1993).

Girardet, C., et al., J. Immunology 136: 1497-1503 (1986).

Primary Examiner—Susan A. Loring

Attorney, Agent, or Firm—Graham & James LLP

[57] **ABSTRACT**

Monoclonal antibodies, in particular 33.28 and 31.1, and chimeric antibodies, in particular mouse/human chimeric Chi #1 specific for glycoprotein antigens of colon carcinoma-associated antigens which are immunogenic in humans, are disclosed. Such antibodies, and fragments and derivatives thereof, are useful in immunodiagnosis and immunotherapy of human colon, breast, and ovarian cancer, and for purification of antigens which can serve as immunotherapeutic agents. Methods of detecting the colon carcinoma-associated antigen in a sample, and methods for treating subjects having colon, breast, and ovarian carcinomas are disclosed.

50 Claims, 4 Drawing Sheets

004080" 4E0E960